

**ENVIRONMENTAL ASSESSMENT  
QUINHAGAK TELECOMMUNICATIONS TOWER SITE  
QUINHAGAK, ALASKA**

For

**UNITED UTILITIES, INC.**

Presented By

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A handwritten signature in black ink, appearing to read 'Greg DuBois', is positioned above the printed name.

Prepared by: Greg DuBois, Project Manager

Date: June 30, 2004

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## ***Acronyms and Abbreviations***

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ADNR	Alaska Department of Natural Resources
AHRS	Alaska Heritage Resources Survey
BSI	Bethel Services, Inc.
CFR	Code of Federal Regulations
EA	Environmental Assessment
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
TBM	Temporary Bench Mark
USF&WS	United States Fish & Wildlife Service
UUI	United Utilities, Inc.

## **1.0 Introduction**

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Bethel Services, Inc. (BSI) completed this Environmental Assessment (EA) for United Utilities, Inc. (UII) for the proposed installation of a 244 foot communications tower to be situated in Quinhagak, Alaska. The tower is planned to be part of a telecommunications network in the Yukon Kuskokwim Delta region. The proposed network is to provide broadband internet services and telemedicine services to the villages served by the network. Bethel is the proposed hub of the network with towers in outlying communities transmitting and receiving signals from Bethel. Figure A in Appendix A – Figures, shows the location of Quinhagak and Figure 2 depicts the project site location. The objective of the EA was to determine if construction and use of the proposed tower will have a significant environmental impact.

This EA was conducted in accordance with Code of Federal Regulations (CFR) Title 47, Volume 1 Section 1.1307 which specifically regulates activities within the jurisdiction of the Federal Communications Commission (FCC).

There are eight actions that may require an EA under these regulations:

1. Facilities that are to be located in an officially designated wilderness area;
2. Facilities that are to be located in an officially designated wildlife preserve;
3. Facilities that may affect listed threatened or endangered species or designated critical habitats or are likely to jeopardize the continued existence of any proposed endangered or threatened species or likely to result in the destruction or adverse modification of proposed critical habitats, as determined by the Secretary of the Interior pursuant to the Endangered Species Act of 1973;
4. Facilities that may affect districts, sites, buildings, structures or objects, significant in American History, architecture, archaeology, engineering or culture, that are listed, or are eligible for listing in the National Register of Historic Places;
5. Facilities that may affect Indian religious sites;
6. Facilities to be located in a flood plain;
7. Facilities whose construction will involve significant change in surface features (e.g. wetlands fill, deforestation or water diversion); and

8. Antenna towers and/or supporting structures that are to be equipped with high intensity white lights which are to be located in residential neighborhoods, as defined by the applicable zoning laws. In addition, commission actions granting construction permits, licenses to transmit or renewals thereof, equipment authorizations or modifications in existing facilities, require the preparation of an EA if the particular facility, operation or transmitter would cause human exposure to levels of radiofrequency radiation in excess of the limits in Sections 1.130 and 2.1093 of Chapter I.

In an e-mail from Ms. Mary Leykom with the US Army Corps of Engineers (USACE) on June 8, 2004, Ms. Leykom indicates that Quinhagak is likely almost all wetland based on airport wetland mapping indicating there are no upland areas except for fill sites. The proposed site is not an upland or filled area and therefore is considered to be a wetland. Construction will include filling a small area (0.19 acres) of wetland with sand and gravel, thereby requiring an EA.

## **1.1 Community Information**

Quinhagak is located in western Alaska on the Kanektok River on the east shore of Kuskokwim Bay, less than one mile from the Bering Sea Coast. It is approximately 71 miles southwest of Bethel at latitude 59-45.12 north, longitude 161-54.10 west, in section 17, Township 005S, R074W, Seward Meridian. It is located in the US Geological Survey (USGS) Goodnews Bay C-8 quadrangle. Quinhagak is in the Bethel recording district and encompasses 5 square miles of land.

The following information was summarized from the Alaska Department of Community and Economic Development:

The origins of Quinhagak have been dated back to 1000 A.D. It was first reported on a Russian map in 1826. After the 1867 purchase of Alaska by the United States, the Alaska Commercial Company sent annual supply ships to Quinhagak with goods for Kuskokwim River trading posts, and a Moravian Mission was built in 1893. In 1904, a mission store opened, followed by a post office in 1905 and a school in 1909. In 1906 through 1909 reindeer were brought in to the Quinhagak area and managed by the Kuskokwim Reindeer Company. By the 1950s, the herd had scattered. In 1915, the Kuskokwim River had been chartered and goods were barged directly up river to Bethel. In 1928, the first electrical plant opened and the first mail plane arrived in 1934.

According to the 2000 census, there are 555 people, 137 households, and 113 families in Quinhagak. The population is approximately 96% native, 3% white, and 1% from other races.



## **2.0 Site Information**

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The site location is close to Nakee Creek along the east side of Arolik Road, approximately one mile south of the main village area. UUI is leasing the lot from Qanirtuuq Incorporated, the local village corporation. The leased lot is 19,921 square feet or 0.46 acres in area. Based on the site survey (Appendix A, Figure 3) the elevation of the site ranged from 90.7 feet up to 92.7 feet in elevation based on a temporary bench mark (TBM). The TBM is located on the front porch of the new Quinhagak school, out from the center of the door. The site is located in a permafrost area where the active layer is approximately 1.5 feet thick. Permafrost is estimated to be from 1.5 feet to approximately 30 feet in depth. Photographs of the site appear in Appendix B.

### **2.1 Current and Historic Uses**

Currently, the site is vacant. There are no visible signs that the site has been used for any other purposes. An archeological survey was completed by Stephen R. Braund & Associates (Appendix C). The survey did not find evidence of prior use nor did their consultation with the locals indicate prior uses of the site. Additional discussion regarding the archeological survey is provided in Section 3 below.

### **2.2 Neighboring Properties**

The land directly adjacent to the site and surrounding the subject site is vacant and is owned by Qanirtuuq, Incorporated. A map of the area surrounding the proposed site depicts the neighboring properties including the Graveyard, the Moravian Lands and Areas A, B, C, D and E. See Appendix A, Figure 4. Areas D and E, which are situated next to the proposed site, are presently owned by Qanirtuuq, Incorporated. Qanirtuuq, Incorporated has proposed that Areas D and E be conveyed to the City of Qanirtuuq, Incorporated in terms of Section 14 (c) (3) of the Alaska Native Claims Settlement Act.

### **2.3 Zoning**

The site is not zoned.

### **2.4 Community Issues and Site Selection**

The village of Quinhagak, village native corporation (Qanirtuuq Incorporated), and the Native Village of Quinhagak were consulted regarding the location of the tower and no objections were received regarding the planned location. A copy of a letter dated March 12, 2004 to both organizations is attached in Appendix E. In response to this letter, UUI worked with Ms. Annie Roach, Tribal Administrator for the village, and the village corporation Business Manager,

Henry Small to select the proposed site and a lease was executed with Qanirtuuq, Incorporated. The proposed site for the tower is considered to be the most suitable location that has good access and that will have little or no negative affect on the local community.

## **2.5    *Construction Plans***

Construction plans are provided in Appendix D. Those plans show that a gravel pad will be constructed on the site. The total planned area of the pad is 8,300 square feet or 0.19 acres. On the pad will be a tower and an equipment building. The building pad will have a 12 inch sand base placed on the native vegetation, topped by an 8 inch layer of gravel. The building will be wood construction on a steel skid, 10 feet wide by 24 feet in length (inside dimensions), and placed on top of driven steel pilings. The pilings will be driven approximately 25 feet below grade.

The tower pad area will have a 12 inch base layer of sand, with 6 inch blue foam boards placed on top of the sand, followed by an 8 inch layer of gravel. The blue foam board is being placed there to prevent potential thawing of the underlying permafrost. The tower will have 3 legs. Each leg will have the support of 3 pilings. Each piling will be placed to a depth of approximately 32 feet below grade. Next to each piling a thermistor will be installed to monitor freeze back and pile performance. The height of the tower is planned to be 244 feet. The tower will be self supporting without guy wires.

The building and tower pad will be secured with a 6 foot high chain link fence with barbed wire, and the enclosed area will be locked to prevent public access.

### 3.0 Compliance Review

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BSI completed this EA in accordance with 47 CFR 1.1307. In this section we are presenting our findings in the order described in the regulations.

1. **Officially Designated Wilderness Areas** – The site is located within the village of Quinhagak on land which is privately owned by Qanirtuuq, Incorporated (as shown on the site survey, Appendix A, Figures 2 and 3), and therefore is not in a designated Wilderness Area. In addition, the United States Fish & Wildlife Service (USF&WS) Yukon Delta National Wildlife Refuge and Wilderness Area map (Appendix E) includes locations of wilderness areas in the region, and shows that there are no designated wilderness areas in this vicinity.
2. **Officially Designated Wildlife Preserve** – The site is located within the village of Quinhagak and as previously stated and shown, the land is privately owned by Qanirtuuq, Incorporated, and therefore is not in a wildlife preserve. Based on a review of the USF&WS Yukon Delta National Wildlife Refuge and Wilderness Area map, it is confirmed that the area within the village of Quinhagak is not part of the Yukon Delta National Wildlife Preserve.
3. **Listed/Endangered Species** – UUI requested concurrence from the USF&WS that the installation of telecommunications towers in Akiak, Quinhagak, and Tuluksak will have no effect on threatened or endangered species or their critical habitat. Ms. Ellen Lance, an Endangered Species Biologist with the USF&WS indicated in letter to UUI dated June 21, 2004 that there are Steller's eider ducks that congregate in small flocks of 1 to 50 individuals off the Quinhagak coastline and that on occasion they fly inland particularly during periods of low visibility. The USF&WS indicated they could not state there would be no effect, but Ms. Lance did state that *“Due to the low number of birds observed near Quinhagak during spring and fall aerial surveys, the distance of the tower from shoreline, and the self supporting nature of the tower, the Service believes the probability that a Steller's eider will strike this tower is so low as to be discountable.”* The USF&WS also indicated that the use of solid or pulsating (beacon) red lights at night should be avoided as research has indicated that those types of lights attract night-migrating birds. UUI plans to comply with that request, while at the same time

complying with the requirements of the FAA (see Section 8 Tower Lighting). A copy of the letter from Ms. Lance is provided in Appendix E. Based on the USF&WS review, the tower is not likely to adversely affect the Steller's eiders or any other threatened or endangered species or designated or proposed critical habitats.

#### **4&5. Historical Properties/Cultural Resources and Native Religious Sites–**

UUI contracted Stephen R. Braund and Associates (SRBA) to conduct a Section 106 of the National Historic Properties Act archival and literature review, archeological compliance survey and consultation for the Quinhagak site. A copy of the review is attached in Appendix C. SRBA's literature and archive review found that there are several known archeological sites in and around Quinhagak, and there were previous cultural resource surveys completed in the Quinhagak area for a subdivision and high school construction. Neither survey indicated the presence of cultural resources near the project site. SRBA conducted consultation with the village of Quinhagak, the village native corporation of Quinirtaaq Incorporated, and the regional Calista Corporation. None of these organizations were aware of cultural resources at the subject site. The organizations were not adverse to placement of the tower at the subject site. SRBA conducted a pedestrian site survey at the proposed site and excavated three shallow test pits to search for cultural resources. Cultural resources were not observed during the pedestrian survey nor in the three shallow test pits. The shallow test pits had frozen soil approximately 6 to 8 inches below the surface. The survey identified a four-inch vegetative layer, a three inch layer of silt and sand with root mat and moss, and the next layer observed during the survey was black water and saturated vegetable matter. Below that was a mix of frozen peat, silt and sand. SRBA attempted to partially thaw the frozen layer by adding water to the test pits, however, no additional thawing occurred. Cultural resources were not observed. SRBA concluded that a finding of "No historic properties affected" was appropriate based on 36 CFR Part 800.4(d)(1). After reviewing SRBA's report, the State Historic Preservation Office concurred with SRBA's finding of "no historic properties affected" on June 25, 2004. A copy of the letter of concurrence is attached in Appendix E.

- 6. Floodplains** – Quinhagak does not participate in the FEMA floodplain program. Instead, the flood level is based on the 1978 flood level designated to be 86.5 feet with an assumed elevation of 100 feet on a TBM on the front porch of the new Quinhagak School, out from the center of the door. According to the US Army Corps of Engineers (USACE), the Recommended Building Elevation (RBE) is two feet above the 1978 flood

level, or 88.5 feet relative to the TBM. In a June 8, 2003 letter from the USACE to UUI, the USACE indicated that the RBE is the best community information they have on potential floods. The site survey (Figure 2, Appendix A) indicates that the elevation at the site ranges from 90.7 up to 92.8 feet relative to the TBM. The site is above the designated flood level by approximately 4 feet and approximately 2 feet above the RBE, and is therefore not in a flood plain. In addition, the base of the tower will be placed on approximately 2 feet of fill material. A copy of information provided at the USCOE Engineers website concerning the flood elevation at Quinhagak is presented in Appendix E.

7. **Surface Features** – The National Wetlands Inventory Maps were reviewed but the Quinhagak area has not been inventoried and/or included in the map of Alaska (attached Appendix E). Ms. Mary Leykom with the USACE in Anchorage, Alaska, was contacted. Ms. Leykom indicated by e-mail on June 8, 2004, that the Quinhagak area is likely all wetlands (a copy of the e-mail is provided in Appendix E). The airport wetland mapping shows no upland areas except fill areas. Since the project site does not have fill, it is considered to be a wetland. Fill material will be placed on this wetland area as part of the construction process. UUI applied for permission to place fill at the Quinhagak location under Nationwide Permit #12. On June 29, 2004, the USACE granted UUI permission to use NWP#12 to place the fill material in the wetland. Copies of the application and the approval are presented in Appendix E.
8. **Tower Lighting and Radio Frequency** – High intensity white lights will not be used on the proposed Quinhagak tower. The tower will be lighted in accordance with FAA regulations including FAA Advisory Circular 70/7460-1 AC 70/7460-1K, Obstruction Marking and Lighting, a med-dual system – Chapter 4,8 (M-Dual), and 12.

Mr. Alex Leavens of UUI reviewed FCC Bulletin 65: “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields” Appendix A, Table 2. He indicated that a radio frequency evaluation was not required because the antennas on the tower will not be located less than 10 meters (32.8 feet) above ground level, and, the power output at the site will be less than 10 kilowatts equivalent radiated power (ERP) power in the direction of the emissions. As the tower will be a 244 foot, self supporting tower, and no antennas will be located less than 10 meters above the ground and the power signal will be low, excess radiation exposure does not appear to be an environmental concern at this site. In addition, the site will be fenced to prevent access to the operations building or the tower itself.

## **4.0 *Conclusions and Recommendations***

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BSI recommends a Finding of No Significant Impact (FONSI) based on the results of this EA. Although the site is located within a wetland, the USACE has approved the site to be filled under the Nationwide Permit #12 and the proposed tower, pad and equipment building are to be constructed in a manner that will not have significant impact on the environment. Based on this information, the preparation of a FONSI order is recommended to allow the development of this site without further environmental analysis.

The benefits to the local community in Quinhagak to have improved communications through this telemedicine network in this remote section of Alaska cannot be over stated.

## **5.0 *References and Information Sources***

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Federal Communications Commission 47 CFR, Chapter 1.1301-1.1319

Federal Aviation Administration

SR Braund Report

US Fish and Wildlife Service, Bethel, Alaska

Alaska Department of Natural Resources

Alaska Historic Register Survey

Federal Emergency Management Agency information at web site:

[http://www.poa.usace.army.mil/en/cw/fl\\_d\\_haz/bethel.htm](http://www.poa.usace.army.mil/en/cw/fl_d_haz/bethel.htm)

United Utilities, Inc.

Alaska Department of Community and Economic Development at web site:

<http://www.dced.state.ak.us/dca/commdb/CIS.cfm>

## ***Limitations***

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The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report



## **APPENDIX A**

### **FIGURES**

**APPENDIX B**  
**PHOTOGRAPH LOG**

**APPENDIX C**  
**ARCHEOLOGICAL SURVEY**

## **APPENDIX D**

### **CONSTRUCTION PLANSAPPENDIX D**

## **APPENDIX E**

### **CORRESPONDENCE AND INFORMATION SOURCES**